



POWER AND ENERGY



Michigan Chapter
NDIA
National Defense Industrial Association

GVSET Power & Energy Preview

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P&E Video

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ENERGY**



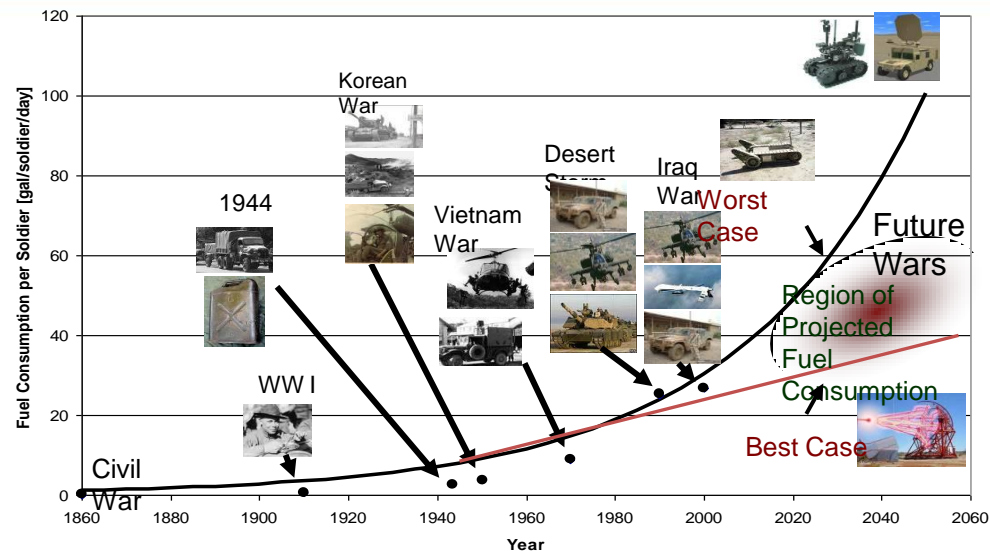
- Short (60-90 sec) P&E video will be shown here to set the stage for the mini-symposium.

Power & Energy Trends

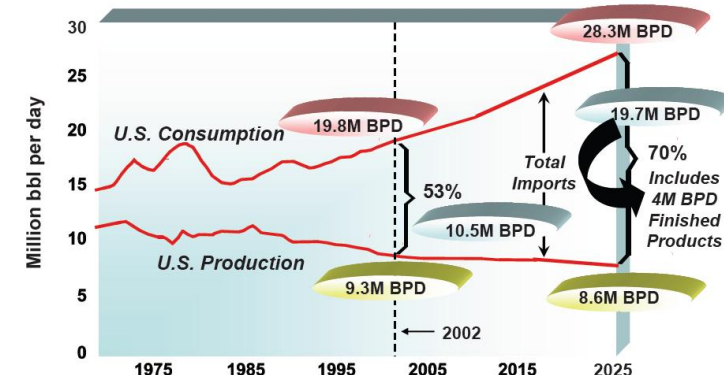
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The Challenges

- Battlefield consumption of energy increasing
 - New C4ISR technologies
 - IED Defeat Systems
 - New weapons (EM guns, lasers)
- Energy security problematic
 - Increasing dependence on foreign oil
 - Alternative sources sought – wind, solar, bio-mass, waste to energy
- Operational issues
 - Battery usage & limitations – energy & power density
 - Demand for auxiliary power on-board vehicles
 - Emphasis on silent (“quiet”) watch
 - Unmanned vehicles (air/ground)
 - Unattended sensors
 - Inefficient management/ distribution of power
 - Demand for soldier-wearable power
- Increased emphasis on system power metrics (KPPs, low consumption components)



The US: Our Increasing Reliance on Fossil Energy Imports



Ground Vehicle Power & Energy Taxonomy

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Ground Vehicle Power and Energy Technology





P&E VIP Speakers

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- **Mr. Chris Cardine** – General Dynamics Land Systems
 - Chief Scientist for Tank Technologies, Engineering Design and Development
- **Dr. Dana Christensen** – Depart of Energy / Oak Ridge National Laboratory
 - Associate Laboratory Director, Energy & Engineering Sciences
- **Mr. Mark Signorelli** – BAE Systems
 - V.P. and General Manager – New Vehicles and Amphibious Systems
- **Mr. Norb Biderman** – 3M Corporation
 - Business Director – Industrial and Transportation Business
- **Colonel Mike Smith** – MCOE
 - Director, Directorate of Training, Doctrine and Combat Developments

- **Energy Storage**

- “Assessment of LI-Ion Batteries and Ultracapacitors to Meet EFV Starting Requirements” - Grayson Walker and Peter Prizio - General Dynamics Amphibious Systems
- “Large Format Lithium Ion Battery Manufacturing “ - Scott Ferguson and Kamen Nechev - Saft America, Inc.
- “Configurable High Power Energy Storage Supporting Propulsion and Survivability Suites” - Gerald McAlwee - BAE

- **Power & Thermal Management**

- “Advanced Microchannel Heat Exchangers: Smaller, Lighter and Higher Performance” - Kelly/Becnel - Mezzo
- “Power Management - An Integrated Approach” - Carrothers/Stanczak - Global ET
- “Developing a Methodology for the Evaluation of Military Hybrid Electric Vehicle Thermal Management Systems” - Jones/ Mendoza/Frazier/Khalil - SAIC/TARDEC
- “Cognitive Power Management Strategies” - U of M Dearborn/GDLS

- **Primary Power**

- “Transfer Challenges of State-of-the-Art Diesel Engine Technologies to meet Military Specifics” - Mark Tatur, Erik Koehler, Dean Tomazic – FEV Inc.
- “Lubrication Technology for High Power Density and Efficiency” - R.A. Erck, G. R. Fenske, O.O. Ajayi, and A. Masoner - Argonne National Laboratory) , A.S. Comfort (RDECOM/TARDEC)
- “System Considerations in the Operation and Control of Integrated Starter/Generator” – Brent Brzezinski Ph.D., Mike Marcel Ph. D., Jay Murphree Ph. D. - DRS

- **Non-Primary Power**

- “Auxiliary Power Unit (APU) for Military Vehicles” - GDLS
- “Robust Control Architecture for Reformer Based PEM APU System” – Battelle
- “Compact Reliable Robust (CORE) Power System for Auxiliary Power Applications” - Namazian, Lux, Venkataraman, Elder, and Bhalerao – Altex; Maslach and Centeck – TARDEC
- “Development of a Lightweight, Multi-fuel Capable, 30 kW APU for Non-Primary Power” – David Sykes - Mainstream Engineering

- Dr. Pete Schihl
 - A brief out on the recent Power & Energy Innovation Workshop.